AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (previously presented): An aqueous composition comprising an amphiphilic block copolymer having a hydrophilic block and a hydrophobic block, dispersed in the solution, and a biologically active compound associated with the polymer, wherein the hydrophilic block has pendant zwitterionic groups.

2. (original): A composition according to claim 1 in which the biologically active molecule is associated by hydrophobic interactions with the copolymer.

3. (previously presented): A composition according to claim 2 in which the biologically active compound has a measured and/or calculated partition coefficient between octanol and water of at least 1.0.

4. (previously presented): A composition according to claim 1 in which the copolymer is dispersed in the form of micelles.

5. (previously presented): A composition according to claim 1 wherein the hydrophilic block is formed by radical polymerisation of ethylenically unsaturated monomers.

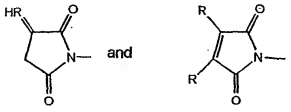
6. (original): A composition according to claim 5 in which the monomers comprise a zwitterionic monomer.

7. (previously presented): A composition according to claim 6 in which the zwitterionic monomer has the general formula

Y B X I

in which Y is an ethylenically unsaturated group selected from the group consisting of H_2C=CR-

CO-A-, H_2C=CR-C_6H_4-A^1-, H_2C=CR-CH_2A^2, R^2O-CO-CR=CR-CO-O, RCH=CH-CO-O-, RCH=C($COOR^2$)CH_2-CO-O,



A is -O- or NR^1;

A^1 is selected from the group consisting of a bond, $(CH_2)_lA^2$ and $(CH_2)_lSO_3$- in which l is 1 to 12;

A^2 is selected from the group consisting of a bond, -O-, O-CO-, CO-O, CO-NR^1-, -NR^1-CO, O-CO-NR^1-, and NR^1CO-O-;

R is hydrogen or C_{1-4} alkyl;

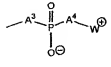
R^1 is hydrogen, C_{1-4} alkyl or BX;

R^2 is hydrogen or C_{1-4}, alkyl;

B is selected from the group consisting of a bond, straight and branched alkanediyl groups, alkylene oxaalkylene groups, and alkylene (oligooxalkylene) groups, optionally containing one or more fluorine substituents; and

X is a zwitterionic group.

8. (previously presented): A composition according to claim 7 in which X is a group of the general formula II

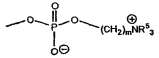


II

in which the moieties A^3 and A^4, which are the same or different, are -O-, -S-, -NH- or a

valence bond and W^+ is a group comprising an ammonium, phosphonium or sulphonium cationic group and a group linking the anionic and cationic moieties which is a C_{1-12}-alkanediyl group.

9. (previously presented): A composition according to claim 7 in which X has the general formula III



III

where the groups R^5 are the same or different and each is hydrogen or C_{1-4} alkyl, and m is from 1 to 4.

10. (previously presented): A composition according to claim 7 in which Y is H_2C=CR-CO-A- in which R is H or methyl and -A- is -O- or -NH-.

11. (previously presented): A composition according to claim 7 in which B is a C_{2-6}-alkanediyl group.

12. (previously presented): A composition according to claim 7 in which the zwitterionic monomer is 2-methacryloyloxyethyl-2'-trimethylammonium ethyl phosphate inner salt.

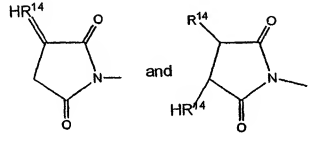
13. (previously presented): A composition according to claim 1 in which the hydrophobic block comprises pendant groups which are ionisable, having a pK_A or pK_B in the range 4 to 10.

14. (original): A composition according to claim 13 in which the hydrophobic block is formed by radical polymerisation of ethylenically unsaturated monomers.

15. (previously presented): A composition according to claim 14 in which the monomers from which the hydrophobic block is formed have the general formula VII

Y^1B^1Q VII

in which Y^1 is an ethylenically unsaturated group selected from the group consisting of $H_2C=CR^{40}$-CO-A^8-, $H_2C=CR^{14}$-C_6H_4-A^9-, $H_2C=CR^{14}$-CH_2A^{10}, $R^{16}O$-CO-$CR^{14}=CR^{14}$-CO-O, $R^{14}CH=CH$-CO-O-, $R^{14}CH=C(COOR^{16})CH_2$-CO-O,



A^8 is -O- or NR^{15};

A^9 is selected from the group consisting of a bond, $(CH_2)_qA^{10}$ and $(CH_2)_q$ SO_3- in which q is 1 to 12;

A^{10} is selected from the group consisting of a bond, -O-, O-CO-, CO-O-, CO-NR^{41}-, -NR^{41}-CO, O-CO-NR^{15}-, and NR^{15}-CO-O-;

R^{14} is hydrogen or C_{1-4}, alkyl;

R^{15} is hydrogen, C_{1-4}- alkyl or B^1Q;

R^{16} is hydrogen or C_{1-4} alkyl;

B^1 is seletected from the group consisting of a bond, straight and branched alkanediyl groups, alkylene oxaalkylene groups, and alkylene (oligooxalkylene) groups, optionally containing one or more fluorine substituents; and

Q is a cationic or cationisable group of the formula $-NR^{17}{}_p$, $-PR^{17}{}_p$ or $SR^{17}{}_1$, in which p is 2 or 3, r is 1 or 2, the groups R^{17} are the same or different and each is selected from the group consisting of hydrogen, C_{1-24} alkyl and aryl, or two of the groups R^{17} together with the

heteroatom to which they are attached from a 5 to 7 membered heterocyclic ring or three R^{17} groups together with the heteroatom to which they are attached form a 5 to 7 membered heteroaromatic ring, either of which rings may be fused to another 5 to 7 membered saturated or unsaturated ring, and any of the R^{17} groups may be substituted by amino or hydroxyl groups or halogen.

16. (original): A composition according to claim 15 in which Q is NR^{17}_2 in which each R^{17} is H or C_{1-4}-alkyl.

17 - 19. (canceled).

20. (previously presented): A composition according to claim 1 in which the polydispersity of molecular weight of each of the blocks is less than 2.0.

21. (previously presented): A composition according to claim 5 in which the degree of polymerisation of the hydrophilic block is in the range 2 to 1000.

22. (previously presented): A composition according to claim 14 in which the degree of polymerisation of the hydrophobic block is in the range 5 to 2000.

23. (previously presented): A composition according to claim 21 or 22 in which the ratio of the degrees of polymerisation of the hydrophobic to hydrophilic blocks is in the range 1:5 to 10:1.

24. (original): A composition according to claim 5 in which the radical polymerisation is a controlled radical polymerisation.

25. (original): A composition according to claim 24 in which the polymerisation is an atom transfer radical polymerisation or group transfer polymerisation.

26. (original): A composition according to claim 25 in which the initiator for the radical transfer polymerisation process is a polymer compound in which the polymeric moiety is

hydrophobic which forms the hydrophobic block of the copolymer.

27. (original): A composition according to claim 25 in which the hydrophobic block is also formed from ethylenically unsaturated monomers by a radical transfer polymerisation process.

28. (previously presented): A composition according to claim 1 in which the biologically active molecule is a cytotoxic compound.

29. (previously presented): A method of forming an aqueous composition comprising an amphiphilic block copolymer and a biologically active compound, in which the copolymer comprises a hydrophilic block and a hydrophobic block in which process an aqueous dispersion of empty copolymer micelles is formed and the micellar dispersion is contacted with biologically active compound under conditions such that the biologically active compound becomes associated with the copolymer in the micelles, wherein the hydrophilic block has pendant zwitterionic groups.

30. (previously presented): A method according to claim 29 in which the biologically active compound has a partition coefficient between octanol and water of at least 1.0.

31. (previously presented): A method according to claim 29 in which the hydrophobic block of the copolymer comprises ionisable groups, and in which the empty copolymer micelles are formed by a process comprising:

a) a first copolymer dissolution step in which the block copolymer, with the groups of hydrophobic block in at least partially ionised form, is dissolved in an aqueous liquid, and

b) a second micelle forming step in which the conditions in the solution are adjusted so that the ionised groups are converted at least partially to their ionisable form, whereby the copolymer is above the critical micelle concentration in the aqueous liquid and micelles are

formed.

32. (original): A method according to claim 31 in which the conditions which are adjusted are of temperature and/or pH.

33. (previously presented): A method according to claim 31 in which the ionisable groups are primary, secondary or tertiary amine groups and in which the micelle forming step involves raising the pH whereby the ionised groups become deprotonated.

34. (previously presented): A method according to claim 29 in which the biologically active compound is in solid form when it is contacted with the aqueous dispersion of empty micelles.

35. (previously presented): A method according to claim 29 in which the biologically active compound is in solution in an organic solvent when it is contacted with the aqueous dispersion of empty micelles.

36. (canceled).

37. (previously presented): A composition according to claim 3 in which the said partition coefficient is at least 1.5.

38. (previously presented): A composition according to claim 8 in which W^+ is a group of formula

$-W^1-N^+R^3_3$, $-W^1-P^+R^4_3$, $-W^1-S^+R^4_2$ or $-W^1$-Het$^+$ in which:

W^1 is selected from the group consisting of alkanediyl of 2-6 carbon atoms optionally containing one or more ethylenically unsaturated double or triple bonds, disubstituted-aryl (arylene), alkylene arylene, arylene alkylene, alkylene aryl alkylene, cycloalkanediyl, alkylene cycloalkyl, cycloalkyl alkylene and alkylene cycloalkyl alkylene, which group W^1 optionally contains one or more fluorine substituents and/or one or more functional groups; and

either the groups R^3 are the same or different and each is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and aryl or two of the groups R^3 together with the nitrogen atom to which they are attached form an aliphatic heterocyclic ring containing from 5 to 7 atoms, or the three groups R^3 together with the nitrogen atom to which they are attached as heteroaromatic ring having 5 to 7 atoms, either of which rings may be fused with another saturated or unsaturated ring to form a fused ring structure containing from 5 to 7 atoms in each ring, and optionally one or more of the groups R^3 is substituted by a hydrophilic functional group, and

the groups R^4 are the same or different and each is R^3 or a group OR^3, where R^3 is as defined above; and

Het is an aromatic nitrogen-, phosphorus- or sulphur-containing ring.

39 - 41. (canceled).

42. (previously presented): A composition according to claim 20 in which the said polydispersity is in the range 1.1 to 1.4.

43. (previously presented): A composition according to claim 21 in which the said degree of polymerisation is in the range 10 to 100.

44. (previously presented): A composition according to claim 22 in which the said degree of polymerisation is in the range 20 to 250.

45. (previously presented): A method according to claim 29 in which the biologically active molecule is a cytotoxic compound.

46. (previously presented): A method according to claim 29 wherein the hydrophilic block is formed by radical polymerisation of ethylenically unsaturated monomers.

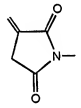
47. (previously presented): A method according to claim 46 in which the monomers

comprise a zwitterionic monomer.

48. (previously presented): A method according to claim 47 in which the zwitterionic monomer has the general formula

Y B X I

in which Y is an ethylenically unsaturated group selected from the group consisting of H_2C=CR-CO-A-, H_2C=CR-C_6H_4-A^1-, H_2C=CR-CH_2A^2, R^2O-CO-CR=CR-CO-O, RCH=CH-CO-O-, RCH=C($COOR^2$)CH_2-CO-O,


and


A is -O- or NR^1;

A^1 is selected from the group consisting of a bond, $(CH_2)_lA^2$ and $(CH_2)_l SO_3$- in which l is 1 to 12;

A^2 is selected from the group consisting of a bond, -O-, O-CO-, CO-O, CO-NR^1-, -NR^1-CO, O-CO-NR^1- and NR^1-CO-O-;

R is hydrogen or C_{1-4} alkyl;

R^1 is hydrogen, C_{1-4}-alkyl or BX;

R^2 is hydrogen or C_{1-4} alkyl; and

B is selected from the group consisting of a bond, straight and branched alkanediyl groups, alkylene oxaalkylene groups, and alkylene (oligooxalkylene) groups, optionally containing one or more fluorine substituents.

49. (previously presented): A method according to claim 49 in which W^+ is a group of formula

$-W^1-N^+R^3_3$, $-W^1-P^+R^4_3$, $-W^1-S^+R^4_2$ or $-W^1$-Het$^+$ in which:

W^1 is selected from the group consisting of alkanediyl of 2-6 carbon atoms optionally containing one or more ethylenically unsaturated double or triple bonds, disubstituted-aryl (arylene), alkylene arylene, arylene alkylene, alkylene aryl alkylene, cycloalkanediyl, alkylene cycloalkyl, cycloalkyl alkylene and alkylene cycloalkyl alkylene, which group W^1 optionally contains one or more fluorine substituents and/or one or more functional groups; and

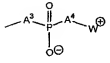
either the groups R^3 are the same or different and each is selected from the group consisting of hydrogen, alkyl of 1 to 4 carbon atoms and aryl or two of the groups R^3 together with the nitrogen atom to which they are attached form an aliphatic heterocyclic ring containing from 5 to 7 atoms, or

the three groups R^3 together with the nitrogen atom to which they are attached as heteroaromatic ring having 5 to 7 atoms, either of which rings may be fused with another saturated or unsaturated ring to form a fused ring structure containing from 5 to 7 atoms in each ring, and optionally one or more of the groups R^3 is substituted by a hydrophilic functional group, and

the groups R^4 are the same or different and each is R^3 or a group OR^3, where R^3 is as defined above; and

Het is an aromatic nitrogen-, phosphorus- or sulphur-containing ring.

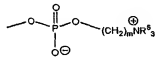
50. (previously presented): A method according to claim 49 in which X is a group of the general formula II



II

in which the moieties A^3 and A^4, which are the same or different, are -O-, -S-, -NH- or a valence bond and W^+ is a group comprising an ammonium, phosphonium or sulphonium cationic group and a group linking the anionic and cationic moieties which is a C_{1-12}-alkanediyl group.

51. (previously presented): A method according to claim 48 in which X has the general formula III



III

where the groups R^5 are the same or different and each is hydrogen or C_{1-4} alkyl, and m is from 1 to 4.

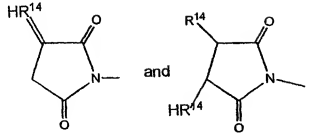
52. (previously presented): The method according to claim 48 in which the zwitterionic monomer is 2-methacryloyloxyethyl-2'-trimethylammonium ethyl phosphate inner salt.

53. (previously presented): A method according to claim 29 in which the hydrophobic block comprises pendant groups which are ionisable, having a pK_A or pK_B in the range 4 to 10.

54. (previously presented): A method according to claim 53 in which the hydrophobic block is formed by radical polymerisation of ethylenically unsaturated monomers including monomers having the general formula VII

$$Y^1B^1Q \qquad \text{VII}$$

in which Y^1 is an ethylenically unsaturated group selected from the group consisting of $H_2C{=}CR^{40}\text{-}CO\text{-}A^8\text{-}$, $H_2C{=}CR^{14}\text{-}C_6H_4\text{-}A^9\text{-}$, $H_2C{=}CR^{14}\text{-}CH_2A^{10}$, $R^{16}O\text{-}CO\text{-}CR^{14}{=}CR^{14}\text{-}CO\text{-}O$, $R^{14}CH{=}CH\text{-}CO\text{-}O\text{-}$, $R^{14}CH{=}C(COOR^{16})CH_2\text{-}CO\text{-}O$,



A^8 is -O- or NR^{15};

A^9 is selected from the group consisting of a bond, $(CH_2)_qA^{10}$ and $(CH_2)_qSO_3$- in which q is 1 to 12;

A^{10} is selected from the group consisting of a bond, -O-, O-CO-, CO-O-, CO-NR^{41}-, -NR^{41}-CO, O-CO-NR^{15}- and NR^{15}-CO-O-;

R^{14} is hydrogen or C_{1-4} alkyl;

R^{15} is hydrogen, C_{1-4}-alkyl or B^1Q;

R^{16} is hydrogen or C_{1-4} alkyl;

B^1 is selected from the group consisting of a bond, straight and branched alkanediyl groups, alkylene oxaalkylene groups, and alkylene (oligooxalkylene) group, optionally containing one or more fluorine substituents; and

Q is a cationic or cationisable group of the formula -NR^{17}_p, -PR^{17}_p or SR^{17}_r, in which p is 2 or 3, r is 1 or 2, the groups R^{17} are the same or different and each is selected from the group consisting of hydrogen, C_{1-24} alkyl and aryl, or two of the groups R^{17} together with the heteroatom to which they are attached from a 5 to 7 membered heterocyclic ring or three R^{17} groups together with the heteroatom to which they are attached form a 5 to 7 membered heteroaromatic ring, either of which rings may be fused to another 5 to 7 membered saturated or unsaturated ring, and any of the R^{17} groups may be substituted by amino or hydroxyl groups or

halogen.

55. (previously presented): A method according to claim 54 in which Q is NR^{17}_2 in which each R^{17} is H or C_{1-4} alkyl.

56. (previously presented): A method according to claim 46 in which the radical polymerisation is a controlled radical polymerisation.